

AMENDMENTS TO THE CLAIMS

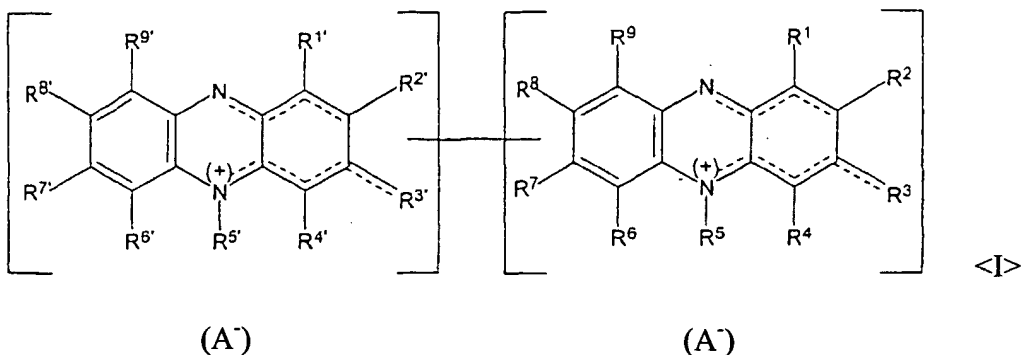
Please amend the claims as follows in accordance with the listing of claims set forth below.

This listing of claims will replace all prior versions, and listings, of all claims in the application.

LISTING OF THE CLAIMS

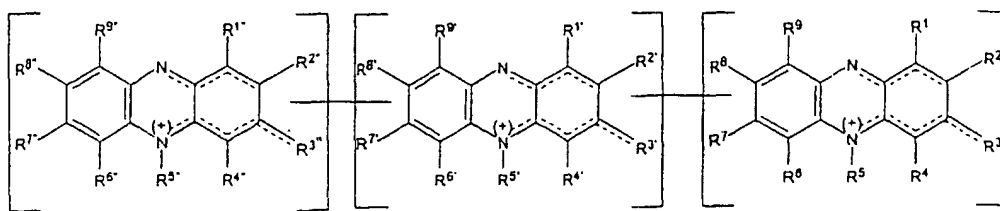
Claim 1. (Currently amended) A mixture of oligomeric phenazinium compounds, containing at least two phenazinium compounds selected from the group consisting of:

a) compounds containing two monomeric units having the following chemical formula < I > :



and

b) compounds containing three monomeric units having the following chemical formula < II > :



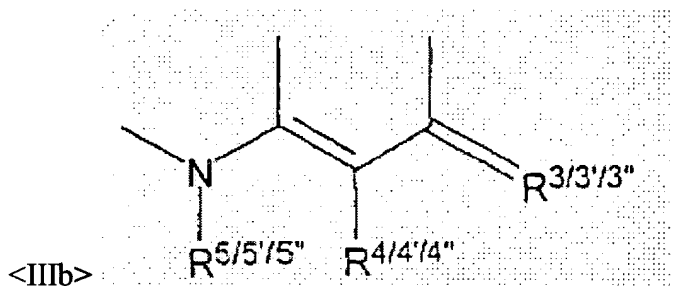
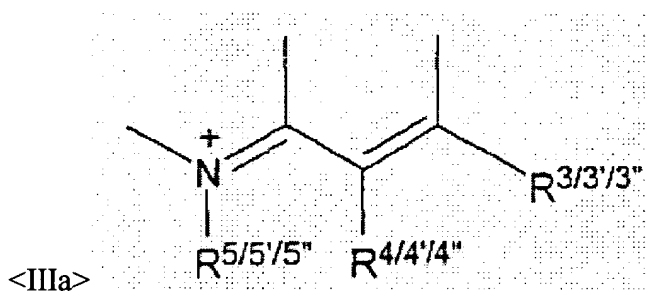
<II>

$$(A^-)$$

(A⁻)

(A)

as well as further oligomeric phenazinium compounds, wherein, in the
aforementioned ~~general chemical formulae~~ formulae ~~formulae~~ < I > and < II > , the structure unit
 $N(R^{5/5'})CC(R^{4/4'})C(R^{3/3'})$ has one of the chemical formula ~~formulae~~ < IIIa > or <
IIIb > :



wherein further

R¹, R², R³, R⁴, R⁶, R⁷, R⁸, R⁹, R^{1'}, R^{2'}, R^{3'}, R^{4'}, R^{6'}, R^{7'}, R^{8'}, R^{9'}, R^{1''}, R^{2''}, R^{3''}, R^{4''}, R^{6''}, R^{7''}, R^{8''} and R^{9''} have each independently one of the meanings selected from the group consisting of hydrogen, halogen, NH₂, amino substituted with lower alkyl, OH, CN,

SCN, SH, C₁₋₈alkyl and phenyl as well as a single bond that links the individual monomeric units together,

R⁵, R^{5'} and R^{5''} denote each independently H, C₁₋₈alkyl or phenyl ~~with the proviso that they do not represent a single bond~~, and

at least one of the residues selected from the group consisting of R², R^{2'}, R^{2''}, R³, R^{3'}, R^{3''}, R⁷, R^{7'}, R^{7''}, R⁸, R^{8'} and R^{8''} has one of the meanings selected from the group consisting of halogen and hydroxy ~~hydroxyl~~,

wherein further A⁻ is an acid anion and

wherein further all of the oligomeric phenazinium compounds having the ~~general~~ chemical formula ~~formulae~~ < I > and < II > are contained in the mixture in an amount of at least 80 mol-%.

Claim 2. (Canceled)

Claim 3. (Previously presented) The mixture of oligomeric phenazinium compounds according to claim 1, wherein at least one of the residues selected from the group consisting of R², R^{2'}, R^{2''}, R³, R^{3'}, R^{3''}, R⁷, R^{7'}, R^{7''}, R⁸, R^{8'} and R^{8''} in the oligomeric phenazinium compounds according to the chemical formula < II > has one of the meanings selected from the group consisting of halogen and hydroxy.

Claim 4. (Previously presented) The mixture of oligomeric phenazinium compounds according to claim 1, wherein at least one of the residues selected from the group consisting of R², R^{2'}, R^{2''}, R⁸, R^{8'} and R^{8''} represents lower alkyl.

Claim 5. (Original) The mixture of oligomeric phenazinium compounds according to claim 4, wherein lower alkyl is methyl or ethyl.

Claim 6. (Currently amended) The mixture of oligomeric phenazinium compounds according to claim 1, wherein at least one of the residues selected from the group consisting of R^3 , $R^{3'}$, $R^{3''}$, R^7 , $R^{7'}$, and $R^{7''}$ represents ~~an~~ a lower alkylated amine.

Claim 7. (Currently amended) The mixture of oligomeric phenazinium compounds according to claim 6, wherein the lower alkylated amine is selected from the group consisting of N- methylamine, N-ethylamine, N, N-dimethylamine and N, N-diethylamine.

Claim 8. (Currently amended) The mixture of oligomeric phenazinium compounds according to claim 1, wherein at least one of the residues selected from the group consisting of R^5 , $R^{5'}$ and $R^{5''}$ represents methyl or ~~an~~ phenyl group.

Claim 9. (Canceled)

Claim 10. (Previously presented) The mixture of oligomeric phenazinium compounds according to claim 1, wherein the acid anion A^- is selected from the group consisting of sulfate, hydrogen sulfate, halide, tetrafluoroborate, hexafluorophosphate, nitrate, acetate, trifluoroacetate and methanesulfonate.

Claim 11. (Currently amended) The mixture of oligomeric phenazinium compounds according to claim 1, wherein the monomeric units in the compounds are selected from the group consisting of:

7-N, N-dimethylamino-3-hydroxy-2-methyl-5-phenyl- phenazinium,

3-chloro-7-N, N-dimethylamino-5-phenyl-phenazinium,

8-dimethylamino-10-phenyl-10H-phenazine-2-one,

~~2-N,N-dimethylamino-10-phenyl-5,10-dihydrophenazine,~~

3-N-ethylamino-7-hydroxy-5-phenyl-phenazinium,

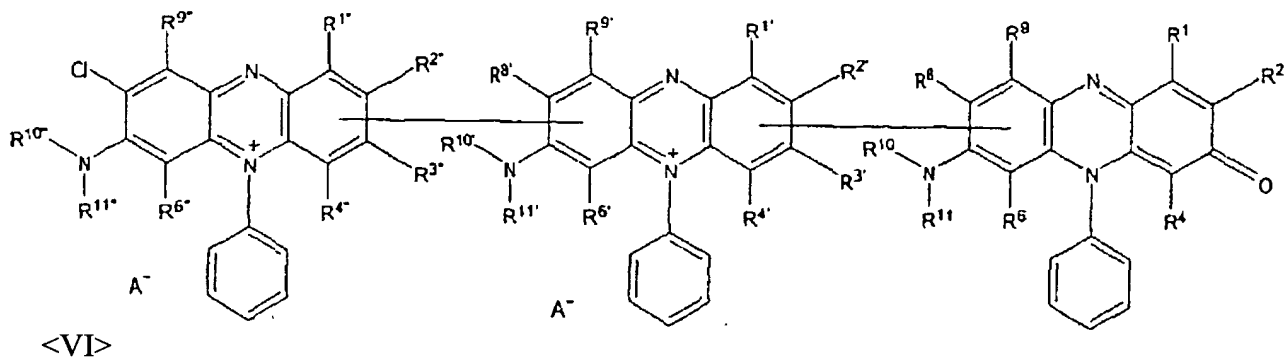
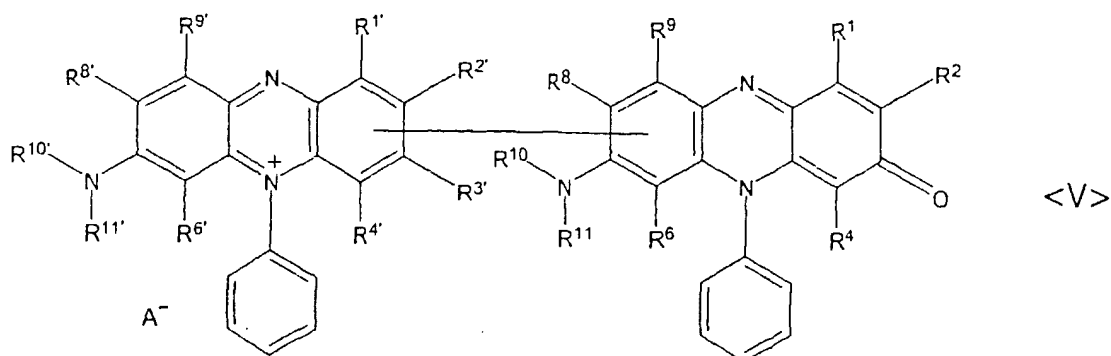
3-chloro-7-N-ethylamino-5-phenyl-phenazinium,

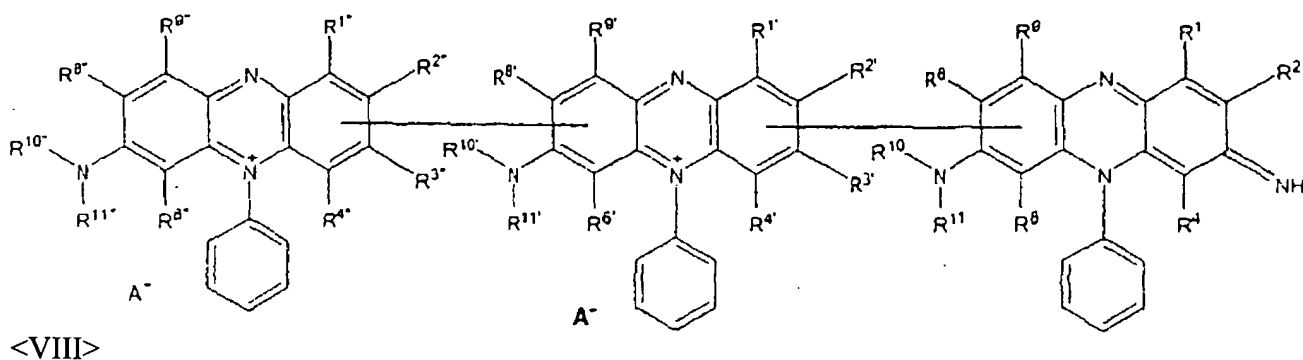
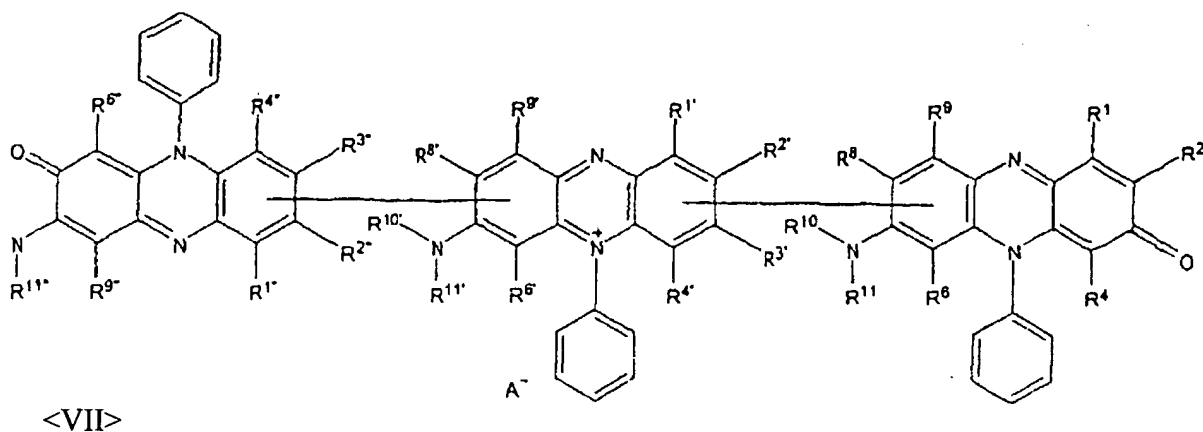
3-methyl-8-N-methylamino-10-phenyl-10H-phenazine-2-one, and

~~7-N-methylamino-2-methyl-5-phenyl-5,10-dihydrophenazine.~~

Claim 12. (Cancelled)

Claim 13. (Previously presented) The mixture of oligomeric phenazinium compounds according to claim 1, wherein the compounds have chemical formulae selected from the group consisting of:





wherein $R^1, R^2, R^4, R^6, R^8, R^9, R^{1'}, R^{2'}, R^{3'}, R^{4'}, R^{6'}, R^{8'}, R^{9'}, R^{1''}, R^{2''}, R^{3''}, R^{4''}, R^{6''}$, $R^{8''}$ and $R^{9''}$ have the above mentioned meanings and wherein $R^{10}, R^{11}, R^{10'}, R^{11'}, R^{10''}$ and $R^{11''}$ represent hydrogen or lower alkyl.

Claim 14. (Currently amended) The mixture of oligomeric phenazinium compounds according to claim 1, selected from the group consisting of:

3'-N,N-dimethylamino-3, 8'-dimethyl-8- (N-methylamino)-7'-oxo-10,5'-diphenyl-5',7'-dihydro-[2, 2'] biphenaziny-10-ium chloride;

3,8,8''-trimethyl-8, 3',3''-tris- (N-methylamino)-7''-oxo-10, 5', 5''-triphenyl-5', 10', 5'',7''-tetrahydro- [2, 2' ; 7', 2''] terphenazine-10-ium chloride;

8,3'-bis-(N,N-dimethylamino)-8'-methyl-7'-oxo-10,5'-diphenyl-5',7'-dihydro-[2,2']biphenaziny-10-ium hydrogen sulfate;

~~8,8'-bis-(N,N-dimethylamino)-3,3'-dimethyl-10,10'-diphenyl-[2,2']biphenazinylium tetrafluoroborate;~~

~~8,8'-bis-(N,N-dimethylamino)-10,10'-diphenyl-3-methyl-[2,2']biphenzinylium tetrafluoroborate;~~

3,8'-bis-(N,N-dimethylamino)-8,3'-dimethyl-5,10'-diphenyl-7-hydroxy-[2,2']biphenazinylium tetrafluoroborate;

3,8'-bis-(N,N-dimethylamino)-8,3'-dimethyl-5,10'-diphenyl-7-hydroxy-[2,2']biphenazinylium chloride;

~~3,8',8''-tris-(N,N-dimethylamino)-8-methyl-5,10',10''-triphenyl-[2,2';7',2'']terphenazine-5,10',10''-ium tetrafluoroborate;~~

~~8'-N,N-diethylamino-8-N,N-dimethylamino-3-methyl-10,10'-diphenyl-[2,2']biphenazinylium sulfate;~~

8'-N,N-diethylamino-3-N,N-dimethylamino-7-hydroxy-8-methyl-5,10'-diphenyl-[2,2']biphenazinylium sulfate;

8,3',3''-tris-(N,N-dimethylamino)-7''-oxo-10,5',5''-triphenyl-5',10',5'',7''-tetrahydro-[2,2';7',2'']terphenazine-10-ium hydrogen sulfate;

3,8'-bis-(N,N-diethylamino)-7-hydroxy-5,10'-diphenyl-[2,2']biphenazinylium sulfate;

7-chloro-3,8'-bis-(N,N-dimethylamino)-5,10'-diphenyl-8-methyl-[2,2']biphenazinylium chloride;

7-chloro-3, 8'-bis-(N,N-dimethylamino)-8,3'-dimethyl-5,10'-diphenyl-[2,2']biphenazinylium chloride;

7-chloro-3,8'-bis-(N,N-dimethylamino)-5,10'-diphenyl- [2,2']biphenaziny-5, 10'-ium chloride;

7-chloro-3, 8',8''-tris- (N, N-dimethylamino)-8, 3'-dimethyl-5, 10', 10''-triphenyl-[2, 2' ; 7', 2''] terphenaziny-5,10',10''-ium chloride;

7-chloro-8,1'-dimethyl-8'-N,N-dimethylamino-5,10'-diphenyl-[2,2']biphenaziny-5,10'-ium chloride;

~~8,8'-bis (N,N-dimethylamino)-10,10'-dimethyl [2,2']biphenaziny-10,10'-ium hydrogen sulfate;~~

8,3',3''-tris-(N,N-dimethylamino)-7''-oxo-10,5',5''-triphenyl-5'',7''-dihydro-[2,2';7',2'']terphenazine-10,5'-ium hydrogen sulfate;

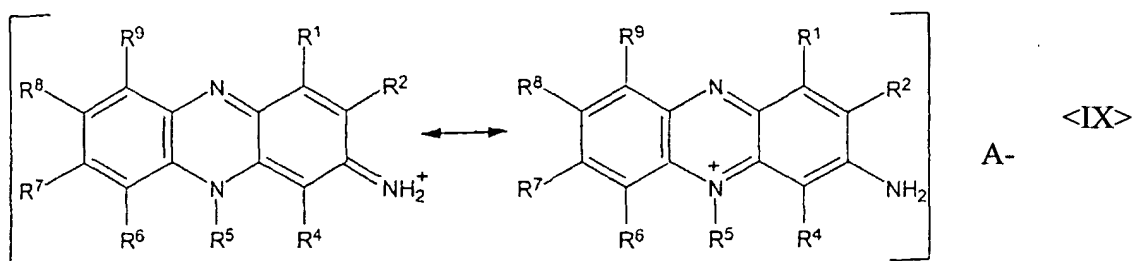
~~8,3',3''-tris (N,N-dimethylamino)-8-methyl-5,10',10''-triphenyl-[2,2';7',2'']terphenazine-5,10',10''-ium tetrafluoroborate;~~

~~8,8'-bis(N,N-dimethylamino)-10,10'-diphenyl [2,2']biphenaziny-10,10'-ium tetrafluoroborate;~~

8,8'-bis-(N-methylamino)-3-chloro-10,10'-diphenyl-[2,2']biphenaziny-10,10'-ium chloride; and

3,3',3''-tris-(N-methylamino)-8''-chloro-5,5',5''-triphenyl-[8,2';8,7'']terphenazine-5,5',5''-ium chloride.

Claim 15. (Withdrawn) A method of preparing the mixture of oligomeric phenazinium compounds according to claim 1, wherein at least one monomeric phenazinium compound of the following general chemical formula <IX>:



wherein $R^1, R^2, R^4, R^5, R^6, R^7, R^8$ and R^9 have the same meanings as given before, is diazoted and the diazonium compounds formed in the diazotation reaction are reacted to the mixture of oligomeric phenazinium compounds in a one-pot reaction.

Claim 16. (Withdrawn) The method according to claim 15, wherein the monomeric phenazinium compounds of the general chemical formula <IX> are selected from the group consisting of safranine dyestuffs in which R^1, R^4, R^6 and R^9 each represent hydrogen, R^5 represents phenyl and R^7 represents $NR^{10}R^{11}$, wherein R^{10} and R^{11} each independently have one of the aforementioned meanings.

Claim 17. (Withdrawn) The method according to claim 15, wherein

- a) the safranine or the mixture of safranines is suspended in mineral acid and
- b) a nitrite or nitrosyl sulfuric acid is added to the suspension of the safranine or the mixture of safranines in the mineral acid at a temperature of at least 15 °C.

Claim 18. (Withdrawn) The method according to claim 17, wherein the mineral acid is selected from the group consisting of hydrochloric acid, sulfuric acid, tetrafluoroboric acid, hexafluorophosphoric acid, phosphoric acid, hydrobromic acid and the mixtures thereof.

Claim 19. (Withdrawn) The method according to claim 15, wherein the resulting diazonium compounds are reacted to form the mixture of oligomeric phenazinium compounds in the presence of a catalyst made of metal, selected from the group consisting of copper, nickel, palladium and iron or of compounds of these metals, or of

compounds selected from the group consisting of alkali xanthogenates, alkali thiocyanates and alkali selenocyanates.

Claim 20. (Withdrawn) The method according to claim 19, wherein the metal compounds are selected from the group consisting of oxides, halides and pseudohalides of the metals.

Claim 21. (Withdrawn) The method according to claim 19, wherein the catalyst is in the form of a powder.

Claim 22. (Withdrawn) An acidic bath for electrolytically depositing a copper deposit, said acidic bath containing oligomeric phenazinium compounds, wherein the oligomeric phenazinium compounds are contained in the form of the mixture according to claim 1.

Claim 23. (Withdrawn) The acidic bath according to claim 22, wherein the mixture of the oligomeric phenazinium compounds is contained in a concentration of 0.00005-0.1 g/l.

Claim 24. (Withdrawn) The acidic bath according to claim 22, wherein it additionally contains compounds selected from the group consisting of nitrogen containing sulfur compounds and polymeric nitrogen compounds.

Claim 25. (Withdrawn) The acidic bath according to claim 24, wherein the concentration of the nitrogen containing sulfur compounds and the polymeric nitrogen compounds contained together in the bath is 0.0001-0.50 g/l.

Claim 26. (Withdrawn) A method of electrolytically depositing a copper deposit by which a workpiece and an anode are contacted with a bath containing copper ions and

the mixture according to claim 1, and a flow of electric current is generated between the workpiece and the anode.

Claim 27. (Withdrawn) The method according to claim 26 including the step of producing decorative surfaces by depositing a highly bright, leveled copper deposit.

Claim 28. (Withdrawn) The method according to claim 26 including forming a copper deposit on printed circuit boards provided with blind microvias.

Claim 29. (Withdrawn) The method according to claim 26 including forming a copper deposit on semiconductor substrates provided with high aspect-ratio recesses.

Claim 30. (Previously presented) The mixture of oligomeric phenazinium compounds according to claim 1, wherein at least one of the residues selected from the group consisting of R^2 , R^3 , R^7 and R^8 in the oligomeric phenazinium compounds according to the chemical formula < II > has one of the meanings selected from the group consisting of halogen and hydroxy.

Claim 31. (Withdrawn) A printed circuit board provided with blind microvias on which board is formed a copper deposit in accordance with claim 1.